

## NEW GENERA FOR THE NEOTROPICAL "PAREROMENE" SPECIES (PYRALIDAE: CRAMBINAE)

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**ABSTRACT.** Three new genera of neotropical diptychophorine Crambinae, *Cleoeromene*, *Neoeromene* and *Incaeromene*, are established to contain seven species hitherto listed under *Pareromene* Osthelder (a synonym of the Old World genus *Glaucocharis* Meyrick), and two new species. *Pareromene smithi* (Druce) is transferred to *Cleoeromene*. *Pareromene felix* (Meyrick), *P. herstanella* (Schaus), *P. octavianella* (Zeller), *P. parvalis* (Walker), and *P. straminella* (Zeller) are transferred to *Neoeromene*, while *N. parvipuncta* from Brazil is described as new. *Pareromene excitata* (Meyrick) was concluded to be synonymous with *P. parvalis*, and *P. leucanthes* (Meyrick) with *P. felix*. *Incaeromene* accommodates the single species *subuncusella* described as new. Two species groups are recognized within *Neoeromene* and their relations are briefly discussed.

Seven neotropical species of diptychophorine Crambinae which were correctly removed from *Diptychophora* Zeller by Błeszyński (1967) are still listed in *Pareromene* Osthelder. They cannot be retained under this name because it is synonymous with *Glaucocharis* Meyrick, a genus confined to the Old World (Gaskin 1985). Furthermore, all differ from *Glaucocharis* in significant morphological characters. While the whole group probably had a common origin, there is no question of the neotropical forms being congeneric with either *Glaucocharis* or *Diptychophora*. The latter genus was recently revised (Gaskin 1986).

Objectives of the present paper are to establish three new genera representing the lines of evolutionary divergence evident in the morphology of these neotropical forms, to describe two new species, to give two new synonymies, to illustrate characters not previously published for the known species, and to summarize features that distinguish the new genera from other genera of diptychophorine Crambinae.

If experience with Old World diptychophorines is any guide, neotropical genera of these small and inconspicuous moths are probably undercollected at present. Cladograms based on present knowledge probably would not fairly represent the true diversity of existing species. Nevertheless, on balance of apparent apomorphies, *Cleoeromene* and *Incaeromene* represent derivative lines from *Neoeromene*-like stock with unspecialized and specialized valvae, respectively. Within *Neoeromene* itself, two sets of trends can be recognized in male genitalia. The *parvalis* group (*parvalis*, *herstanella*, *octavianella*), with apically cleft uncus, strongly developed segregation of the sacculus, and aedeagus cleft apically into a pair of strong protrusions, seems to be more derivative than the *felix* group (*felix*, *straminella*), where the uncus is

entire, the sacculus only weakly segregated, and the aedeagus has simple apical sclerotization. I do not separate these lines into named genera because *parvipuncta*, with a slight medial depression at the apex of the uncus, a partially segregated lobe of the sacculus, and paired patches of apical sclerotization of the aedeagus not drawn out into actual protrusions, seems to provide a clear link between the two group-trends genitally.

The following abbreviations are used in the text: BMNH (British Museum [Natural History]), CM (Carnegie Museum of Natural History, Pittsburgh), CNC (Canadian National Insect Collection, Ottawa), MCU (Museum of Cornell University), MNHU (Museum für Naturkunde der Humboldt-Universität, Berlin, German Democratic Republic) and GC (Private collection of the author). Specimens examined bear Gaskin and Shaffer determination labels (BMNH). In descriptions of male genitalia the LMB ratio refers to the length to median breadth ratio of the aedeagus. Decimals indicate position as a proportion of the total length of a structure or organ. In the forewing, measurements along the costa are taken from the base, those along the termen or margin from the apex, and those along fascia from the costa. In male genitalia, measurements along the uncus, gnathos, valva, valval costa and aedeagus are from the base of each. In female genitalia, measurements along the ductus bursae are from the ostium.

### Key to the Genera of New World Diptychophorine Crambinae

- 1 Forewing vein  $R_3$  vestigial or absent, hindwing  $M_2$  absent (both sexes). Lateral, medial foramen present in vinculum of male ..... *Microcausta*
- Forewing vein  $R_3$  and hindwing  $M_2$  fully developed. Male vinculum without foramen ..... 2
- 2(1) ♂: Gnathos strongly "fish-hooked"; valva quadrate, truncated, barely as long as wide.
  - ♀: Antrum membranous, simple ..... *Diptychophora*
  - ♂: Gnathos slightly curved or nearly straight. Valva about 1.5× longer than wide, often tapered apically.
    - ♀: Antrum sclerotized, often complex ..... 3
- 3(2) ♂: Juxta with two pairs of sclerotized apical horns.
  - ♀: Antrum with complex folds but not segregated into laterally paired structures ..... *Steneromene*
  - ♂: Juxta simple to complex, but without two pairs of protrusions.
    - ♀: Antrum complex, with strong tendency for division into right and left lateral structures, including subantral accessory sacs ..... 4
- 4(3) ♂: Juxta with huge medial spur. Gnathos hastate. Aedeagus lacking sclerotization.
  - ♀: Antrum with pair of internal lateral cupped folds. Corpus bursae with two signa ..... *Cleoeromene*
  - ♂: Juxta lacking spur. Gnathos not hastate. Aedeagus with some apical sclerotization, often laterally divided.
    - ♀: Antrum with a pair of internal lateral folds, but not cupped. Corpus bursae asignate ..... 5

- 5(4) ♂: Tegumen simple, uncus without basal spurs.  
 ♀: As in 4 ..... *Neoeromene*  
 - ♂: Tegumen with prominent apical posteriad spur. Uncus with 2 dorsal spurs.  
 Female not known ..... *Incaeromene*

### *Cleeromene*, new genus

Type species *Diptychophora smithi* Druce (1896:292, pl. lxiv, fig. 20) (by monotypy).

**Description.** Forewing Sc concurrent with  $R_1$ ,  $R_3$  and  $R_4$  stalked. Hindwing cell nearly closed by connections between  $M_1$ ,  $M_2$ ,  $M_3$  and  $Cu_1$  arising from cell, but with roots close together. Male juxta bearing at its ventroposterior center a gigantic apically serrated, flattened prong. Valva tapering, with subapical prong arising from distal extremity of a saccular fold, but involved with costal region by introrse movement. Female antrum characterized by a pair of large, strong, lateral, internal, elongate cupped folds. Corpus bursae with two small circular signa.

**Etymology.** Κλέος (Kleos)—glory (Doric Greek); Ερωμένη (Eromenē)—mistress (f).

### *Cleeromene smithi* (Druce), new combination

*Diptychophora smithi* Druce (1896:292).

*Diptychophora smithi* Druce; Bleszyński & Collins (1962:299).

*Pareromene smithi* (Druce) Bleszyński (1967:92, 96).

**Description** (Fig. 1). Wing expanse 15–17 mm ( $N = 11$ ). External features satisfactorily described by Druce (1896).

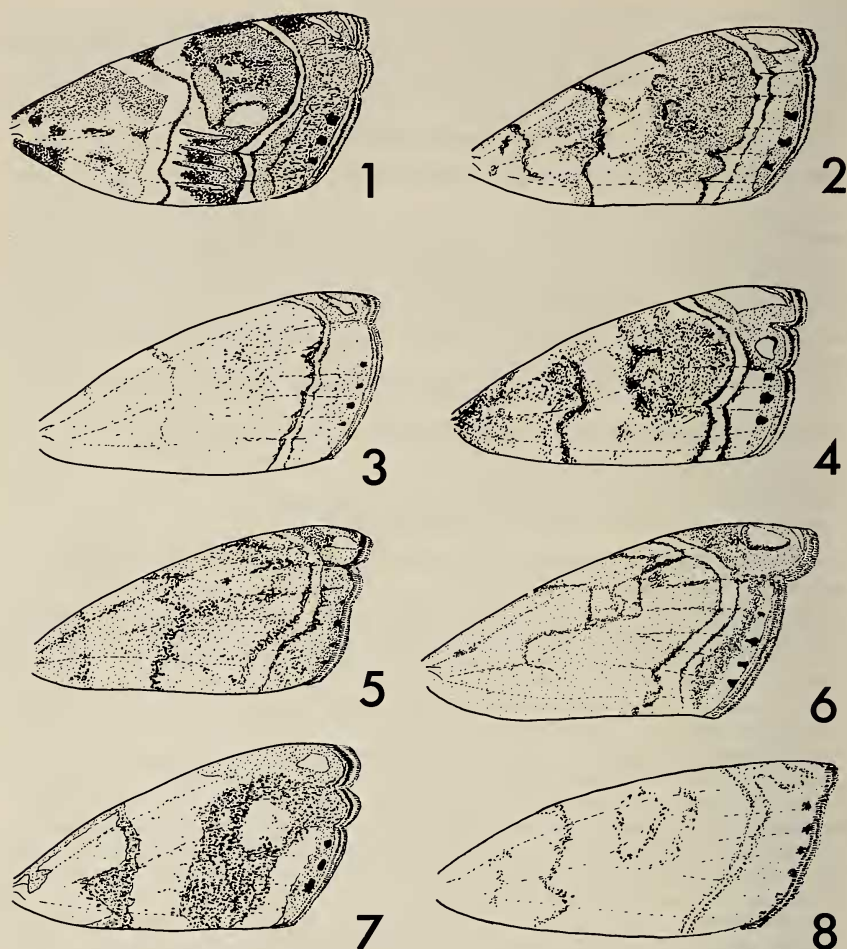
**Male genitalia** (Fig. 9) ( $N = 1$ ). Uncus simple, swollen dorsally from 0.3–0.9. Gnathos tapering abruptly to slender pedicel, with spatulate-hastate, flattened apical expansion. Tegumen simple, with strong ventral margins. Vinculum narrow, barely half as wide in profile as length of uncus. Saccus narrow, elongate, almost tubular with rounded apex; equal in length to uncus. Juxta a quadrate plate, basally triangular, rounded apically, with concave lateral margins. A huge prong arising from upper central region of juxta, grotesquely out of proportion to rest of genitalia, nearly  $4 \times$  length of uncus, is apparently formed of two fused elements and probably anellar or transtillar in origin. Valva rounded, tapered, with some centrobasal development which cannot be attributed for certain to development of the dorsal margin of the sacculus or ventral margin of the valvula region. Costa strong, drawn apically into short, blunt prong. Valvula with longitudinal medial pleat. Aedeagus about  $1.2 \times$  length of valva, tubular, LMB ratio about 10:1, apically truncate, lacking cornuti or external spines.

**Female genitalia** (Fig. 10) ( $N = 1$ ). Anal papillae weakly fused dorsally. Anterior apophyses about  $0.6 \times$ , and 8th tergite about  $0.5 \times$  length of posterior apophyses. Antrum a wide, flared funnel. Lamella antevaginalis highly sclerotized, developed into a pair of lateral, elongate, cupped plates curved below ostium (possibly forming a receptacle for the juxtal spur of the male). Lamella postvaginalis forming a strong, single, dorsal plate. Ductus bursae about  $2.5 \times$  length of posterior apophyses. Scobinate subantral sac present at about 0.3, ductus seminalis joining at about 0.7. Corpus bursae bearing two small, circular signa.

**Types.** Lectotype ♂ (designated here), MEXICO: Amula, Guerrero, 6,000 ft (1,829 m), "August", Smith, BMNH, genit. prep. pyral. 15101. Paralectotypes: 5 ♂ with same data, 2 ♂ similar but "September", all BMNH.

**Other material examined.** MEXICO: 2 ♂, 1 ♀, Iguala, Guerrero, 2,400' (731 m), 8.VIII.1954, J. G. Chillcott, CNC, genit. prep. D.E.G. 1979/3.

**Discussion.** Little is known about this species, other than that it inhabits moderate altitudes in SW Mexico. The relations to *Neoeromene* in genitalic characters in both sexes are clear, except that in *smithi* it is the juxta, rather than the valva, which has undergone



FIGS. 1-8. Forewings of *Cleoeromene*, *Neoeromene* and *Incaeromene* species. 1, *Cleoeromene smithi*; 2, *Neoeromene octavianella*; 3, *N. herstanella*; 4, *N. parvalis*; 5, *N. parvipuncta*; 6, *N. straminella*; 7, *N. felix*; 8, *Incaeromene subuncusella*.

sclerotized elaboration and differentiation. The antrum is also more complex in *Cleoeromene* than in *Neoeromene*.

### *Neoeromene*, new genus

Type species. *?Isopteryx parvalis* Walker (1865:1316).

**Description.** Forewing Sc concurrent with  $R_1$ ;  $R_3$  stalked with  $R_4$ ; venation similar to *Glaucocharis* Meyrick. The male genitalia of *Neoeromene* characteristically have one or more large, sclerotized areas or spurs at the apex of the aedeagus, unlike any found in species of *Glaucocharis*. In about half the known species, the sacculus of the valva is



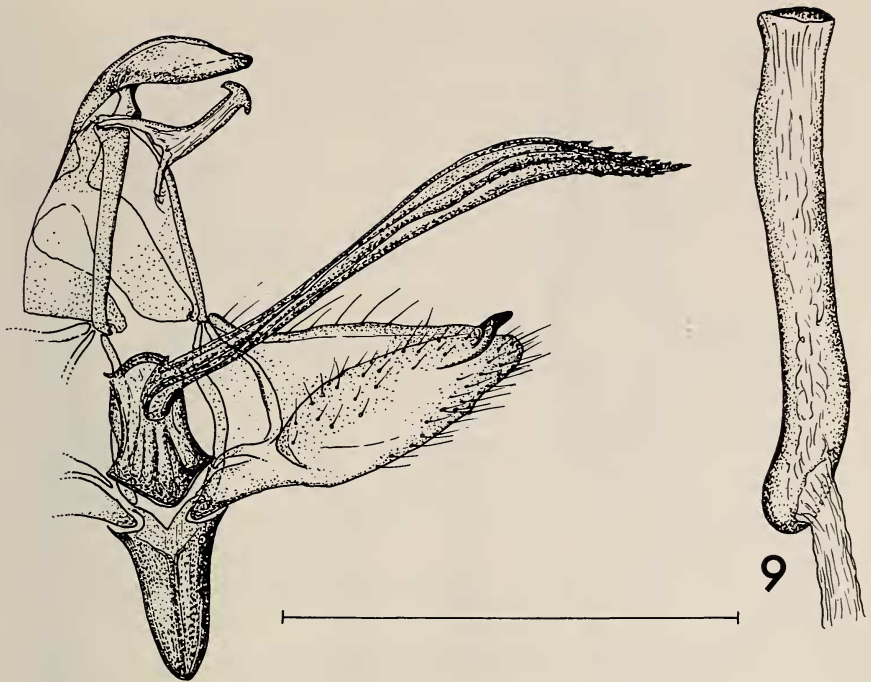


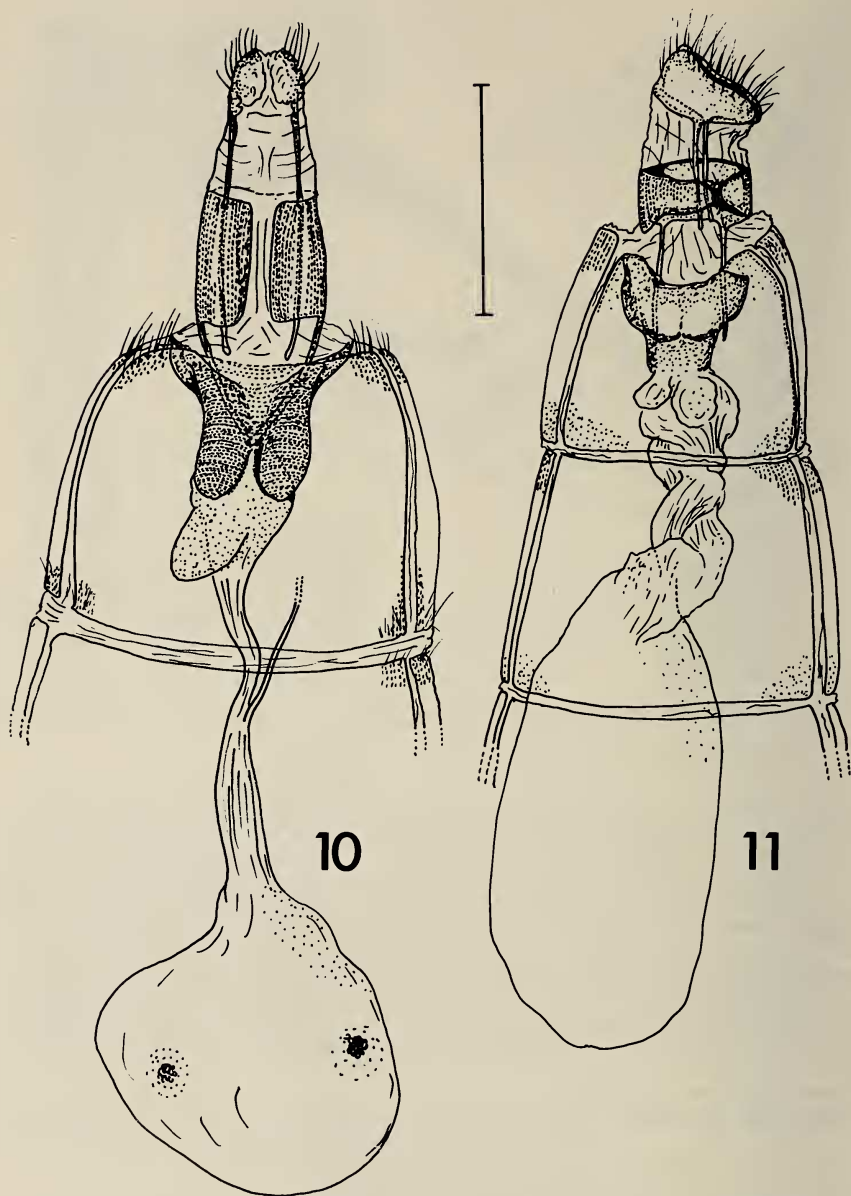
FIG. 9. Male genitalia of *Cleoeromene smithi* lectotype, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

strongly developed, with medial and ventral flanges or points or both. In the others, lateral or medial grooving of the valva extends from this region. In most species, the tip of the uncus is minutely or distinctly bifid. There is a strong tendency in all species for marked medial constriction of the juxta, for development of apical curved horns on the juxta, and the parallel development of an anellar structure around the aedeagus not found in *Glaucocharis*, but similar to that in some southern hemisphere Chilonini (Gaskin 1973). Relatively few females of *Neoeromene* are known, but in these the antrum is usually much broader and more complexly folded than in *Glaucocharis*, and the ductus is also broad and either pleated or laterally lobate. While the forewing markings are superficially similar to those of many species of *Glaucocharis*, there are marked differences and developments in the morphology of the genitalia which do not at all resemble those found in the Old World genus. Because females of several species are not known, the sexes are keyed separately.

**Etymology.** Νέος (Neos)—young; Ερωμένη (Eromenē)—mistress (f).

### Key to the Species of Male *Neoeromene*

- 1 Costal region of valva strong or weak, but lacking basal protuberance; saccular region of valva differentiated into strong lobe terminating in a ventral prong ..... 2
- Costal region of valva with prong; sacculus undeveloped ..... 4
- 2(1) Sclerotization of sacculus confined to ventral margin ..... 3
- Sclerotization extending thickly at right angles into middle of valva from base of terminal prong ..... *octavianella*



FIGS. 10, 11. Female genitalia of *Cleoeromene* and *Neoeromene*, ventral aspect. 10, *Cleoeromene smithi*; 11, *Neoeromene parvalis*. Scale = 1 mm.

- 3(2) Terminal prong of sacculus short, barely  $0.15\times$  length of uncus; sclerotized anellar structure present in association with juxta ..... *parvalis*  
 - Terminal prong of sacculus long,  $0.5\times$  or more length of uncus; membranous anellar structure present in association with juxta ..... *herstanella*  
 4(1) Costal prong smooth, arising near base, directed dorsoposteriad ..... 5  
 - Costal prong heavily spinose, arising at about 0.5 and curving introrse and ventrad ..... *parvipuncta*  
 5(4) Juxta with pair of strong apical horns. Aedeagus with single narrow, apical prong ..... *straminella*  
 - Juxta lacking apical horns. Aedeagus with large, flattened, sclerotized apical spur, with serrated edge and secondary hooked basal structure ..... *felix*

### Key to the Species of Female *Neoeromene*

- 1 Medial depression in posterior margin of 7th sternum; antrum a strong, globose funnel, ductus bursae with several small accessory pockets in subantral region; corpus bursae massive ..... *parvalis*  
 - Posterior margin of 7th sternum without medial depression; antrum strong, but not globose; ductus bursae without accessory pockets, or if present, associated with very elongate, narrow ductus bursae ..... 2  
 2(1) Ductus bursae less than length of 8th tergum at antrum, barely wider than apophyses at midpoint, elongate, and sclerotized only in antral region ..... *herstanella*  
 - Ductus broad,  $2\times$  length of 8th tergum at antrum, strong to about 0.4, with series of longitudinal pleats from subantral region to junction with ductus seminalis ..... *felix*

### *Neoeromene parvalis* (Walker), new combination

?*Isopteryx parvalis* Walker (1865:1316).

*Diptychophora excitata* Meyrick (1931:109). **NEW SYNONYMY.**

*Diptychophora excitata* Meyrick; Błeszyński & Collins (1962:297).

*Pareromene excitata* (Meyrick) Błeszyński (1967:92, 96).

[?*Isopteryx parvalis* (Walker) Błeszyński & Collins (1962:296, 298), erroneously synonymized with *Diptychophora azanalis* (Walker).]

*Pareromene parvalis* (Walker) Błeszyński (1967:92, 96).

**Description.** Alar span 10–12 mm (Fig. 4) ( $N = 7$ ). Redescribed here, since Walker's account is ambiguous. Labial palpi, head, thorax, abdomen, dull white, with scattered brownish scaling. Ground color of forewings dull white. Basal fascia nearly obsolete, position marked only by broken patches of dark scales. Antemedial fascia more complete, but solid, irregular, dark brown. Faint orange reniform marking present. Costa with large patch of white from median line to 0.6, terminated by short oblique bar on costa. Region between basal and antemedial fascia, and all of discal area, filled with scattered scales of buff proximally, darker brown distally. Postmedial fascia cream, irregularly and narrowly bounded with dark brown. Terminal zone creamy white, with faint orange stripe along margin, within which is a row of 3–4 irregular black spots. Apical zone faint orange, with large central white area. Cilia pale brown with dark apices. Hindwings creamy white, cilia similar, but with dark bases in apical region. Ventral surfaces straw and mid-brown, with apical forewing markings repeated from dorsal surface.

**Male genitalia** (Fig. 12) ( $N = 3$ ). Uncus broad, simple, convexly tapered to a cleft apex. Gnathos slender, curved dorsad to bluntly pointed apex. Tegumen simple; vinculum a narrow strap at base of valva; saccus almost negligible; juxta basally triangular, sharply constricted distally into a narrow folded groove having membranous extensions with sclerotized margins, forming a weak anellar structure supporting aedeagus. Valva  $2.7\text{--}3.0\times$  length of uncus, apically broadly rounded; costal region a narrow sclerotized zone; sacculus a strong marginal lobe comprising basal  $\frac{1}{2}$  of valva, terminating in short, sharp

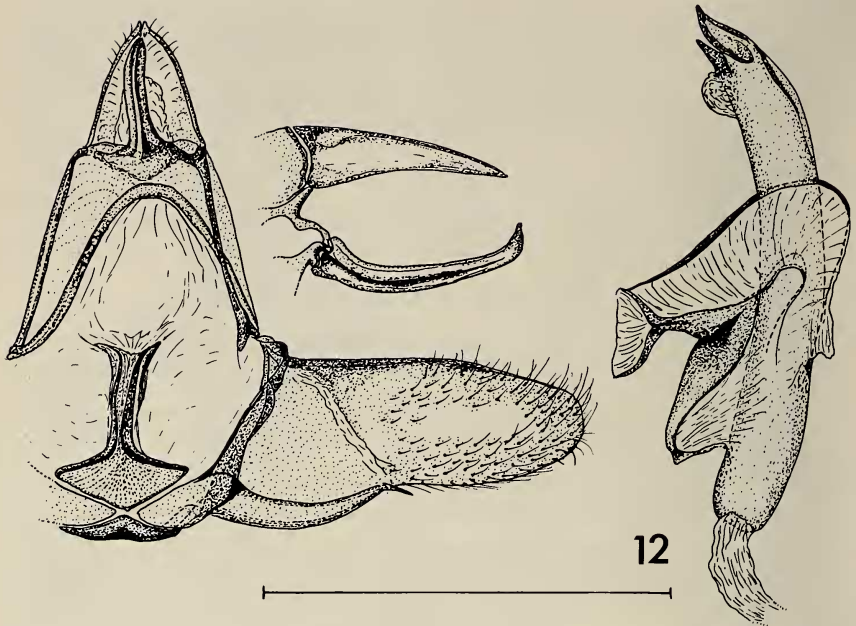


FIG. 12. Male genitalia of *Neoeromene parvalis*, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

spur at about 0.4; valva crossed by narrow membranous zone from base of this spur obliquely to base of costal margin. Aedeagus tubular, LMB ratio about 8:1, curved gently ventrad, apex bearing pair of broad curved spurs, one larger than the other.

**Female genitalia** (Fig. 11) (N = 1). Anal papillae broad, prominent, moderately fused dorsally; 8th abdominal tergum narrow, barely as long as anal papillae; anterior and posterior apophyses approximately equal in length; posterior margin of 7th sternum medially indented, infolded. Antrum a broad, globate, sclerotized funnel, basally constricted at about 0.2; ductus bursae complexly folded, with 2 or more small, membranous, lateral, subantral pockets; position of ductus seminalis junction difficult to determine in preparation, apparently at about 0.5; corpus bursae asiginate, massive.

**Types.** Holotype *parvalis* ♂, BRAZIL: "Ega (Brazil) 57-125", BMNH, genitalia prep. BM pyral 7679.

Holotype *excitata* ♀, BRAZIL: Obidos, VIII.19, Parish, BMNH genitalia prep. BM pyral 7681.

**Other material examined.** PERU: 4 ♂, Iquitos, VIII.1920, Cornell Univ. Exp. Lot 607, MCU, genitalia prep. Cornell #1 (M. Shaffer); 1 ♂, I.VIII.1920 (same Cornell lot. no.), CNC, genitalia prep. 4382-SB.

**Discussion.** The genitalia of both sexes demonstrate clearly the major characteristics of this genus; the male uncus is apically divided, and the sacculus of the valva strongly developed, while in the female the broad antrum is sclerotized, the subantral region of the ductus is complex, and the corpus bursae asiginate. Nothing is known of the geo-



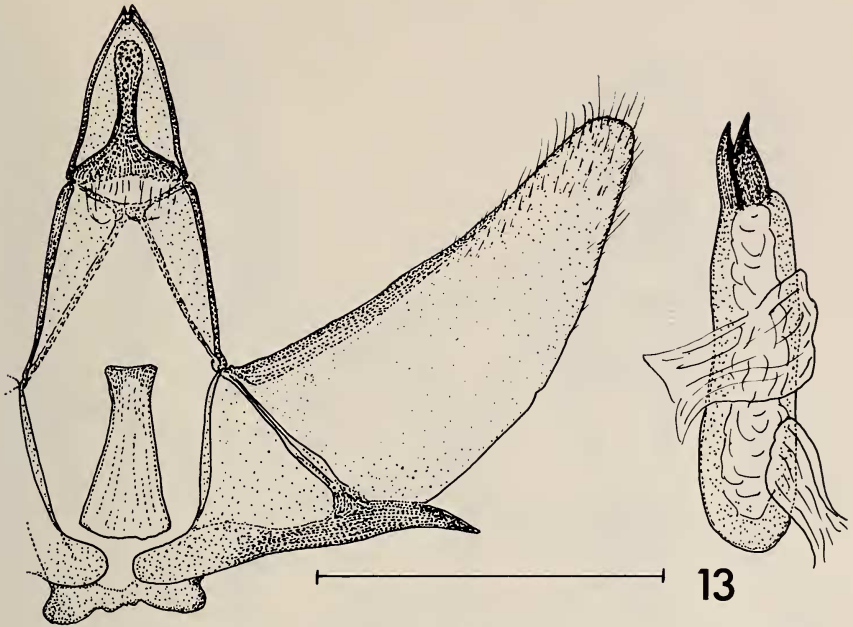


FIG. 13. Male genitalia of *Neoreromene herstanella* holotype, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

graphic distribution and ecology, except that it appears to occur across the upper Amazon region and the flight period includes August.

### *Neoreromene herstanella* (Schaus), new combination

*Diptychophora herstanella* Schaus (1922:132).

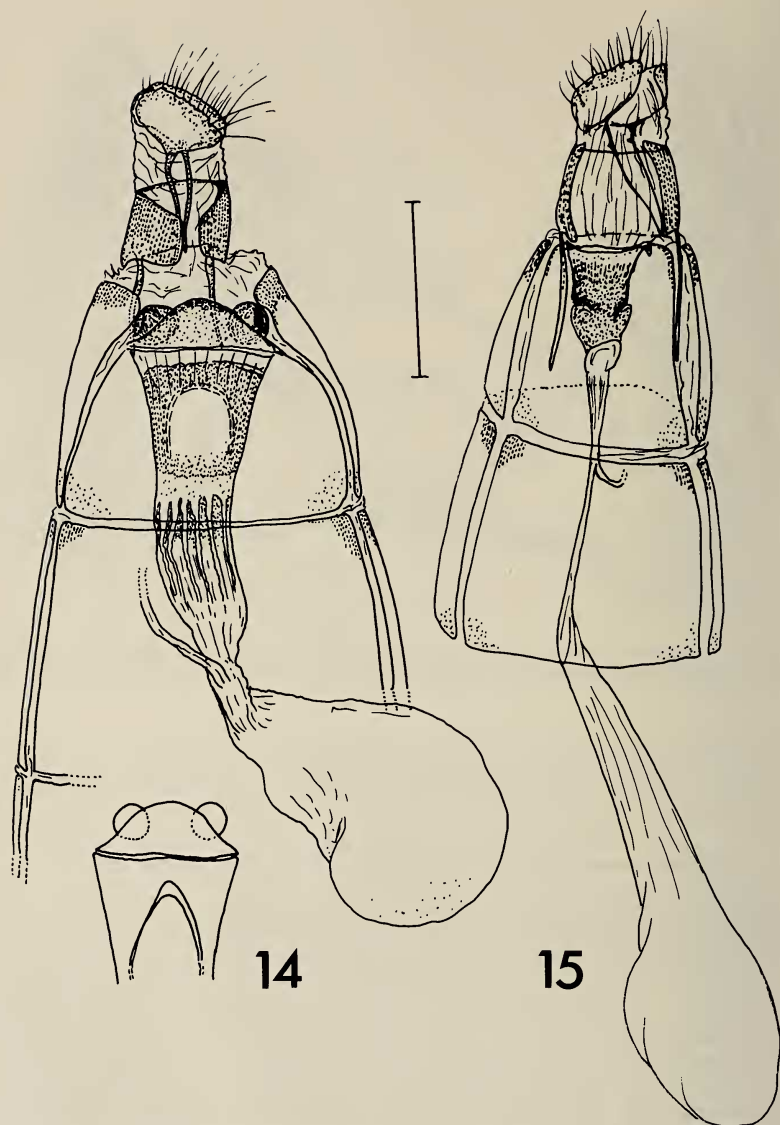
*Diptychophora herstanella* Schaus; Błeszyński & Collins (1962:297).

*Pareromene herstanella* (Schaus) Błeszyński (1967:92, 96).

**Description.** Alar expanse 9 mm (Fig. 3) (N = 2). External features adequately described by Schaus (1922).

**Male genitalia** (Fig. 13) (N = 1). Uncus broad, tapered, bluntly pointed; apex minutely cleft. Gnathos slender, tubular, distal half rugose or "pimpled". Tegumen simple, broad, strong; vinculum triangular in profile, about half as wide as uncus length; saccus small, truncate, with angles slightly pointed; juxta an elongate plate, broad at base, otherwise narrow, weak; membranous anellar structure present. Valva 4.0–4.2 × length of uncus; costal region a sclerotized strip running dorsal length of valva, without prongs or protrusions; valvula tapered to blunt dorsal point; sacculus with distinct lobe, drawn distally into a prong directed posteroventrad, 0.5 × length of uncus. Aedeagus about 0.7 × length of valva, stout. LMB ratio about 5.5:1, with pair of large, recurved apical horns; cornuti absent.

**Female genitalia** (Fig. 15) (N = 1). Anterior and posterior apophyses approximately equal in length; anal papillae separate. Antrum a sclerotized tapered funnel, with basal swellings; ductus bursae about 4.5 × length of posterior apophyses, slender; ductus seminalis joining at about 0.4; corpus bursae relatively small and asignate.



FIGS. 14, 15. 14, Female genitalia of *Neoeromene felix* (*leucanthes* holotype); 15, *N. herstanella*; both ventral aspect. Scale = 1 mm.

**Types.** Holotype ♂, PANAMA: with 4 labels; "Porto Bello, Feb. 24. Pan." (white), "Type No. 25535 U.S.N.M." (orange), "slide SB ♂ No. 4617" (pale blue), "*Diptychophora herstanella* type. Schs." (white).

**Other material examined.** 1 ♀, COSTA RICA: Siquirres, Limon, 50 m, no date. BM 16753.

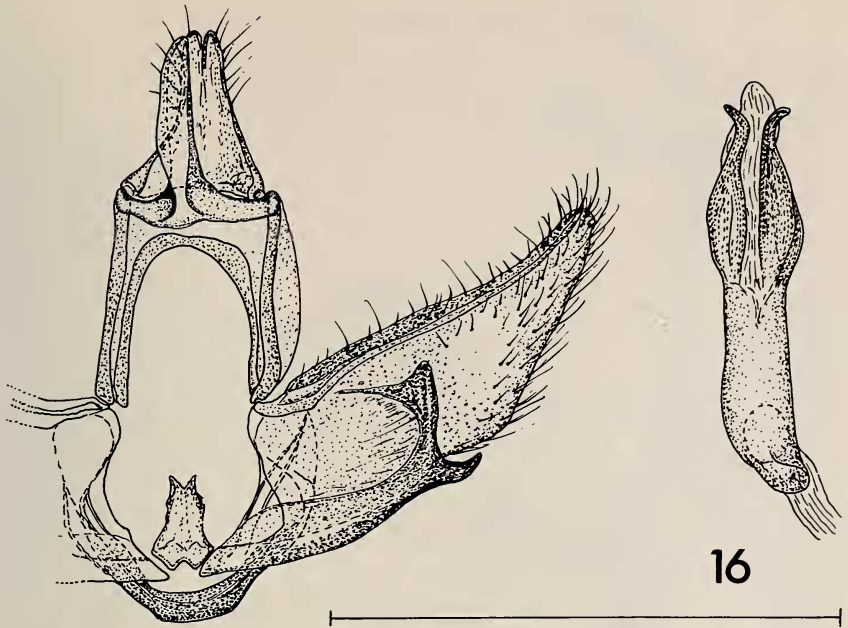


FIG. 16. Male genitalia of *Neoreromene octavianella*, paralectotype, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

**Discussion.** This species is presently known only from Panama and Costa Rica, with a flight period including February. It is close to *parvalis* in major genitalic characters, and may be a Pleistocene segregate from that species.

#### *Neoreromene octavianella* (Zeller), new combination

*Diptychophora octavianella* Zeller (1877:33, pl. 1, fig. 13).

*Diptychophora octavianella* Zeller; Błeszyński & Collins (1962:298).

*Pareromene octavianella* (Zeller) Błeszyński (1967:92, 96).

**Description.** Alar span 12–14 mm (Fig. 2) (N = 3). Described here because Zeller's account does not fully distinguish it from similar species. Female not yet collected. Head, thorax, palpi dull whitish with some grey and buff. Ground color of forewings off-white. Basal fascia represented by some blackish brown scales. Antemedial fascia more distinct, dull brown, slightly zigzagged. Faint yellow reniform mark present in disc, which has scattered buff scaling. Postmedial fascia a broad creamy band, zigzagged near apical angle and towards dorsum, edged thinly with dark brown. Terminal zone white, with 2–3 small blackish spots on margin between 0.5–0.8, surrounded by some yellow scales. Apical zone bright yellow, with suboval, central, shining white patch not touching costa. Small wedge of white scales present at apical extremity. Hindwings whitish. Cilia pale brown with darker tips. All ventral surfaces dull mid-brown, with apical and terminal markings repeated from dorsal surface.

**Male genitalia** (Fig. 16) (N = 2). Uncus broad, slightly setulose, tapered, with bifid apex. Gnathos slightly shorter than uncus, T-shaped, with strong base nearly at right angles to subapically swollen perpendicular element. Tegumen simple, with thick, strong

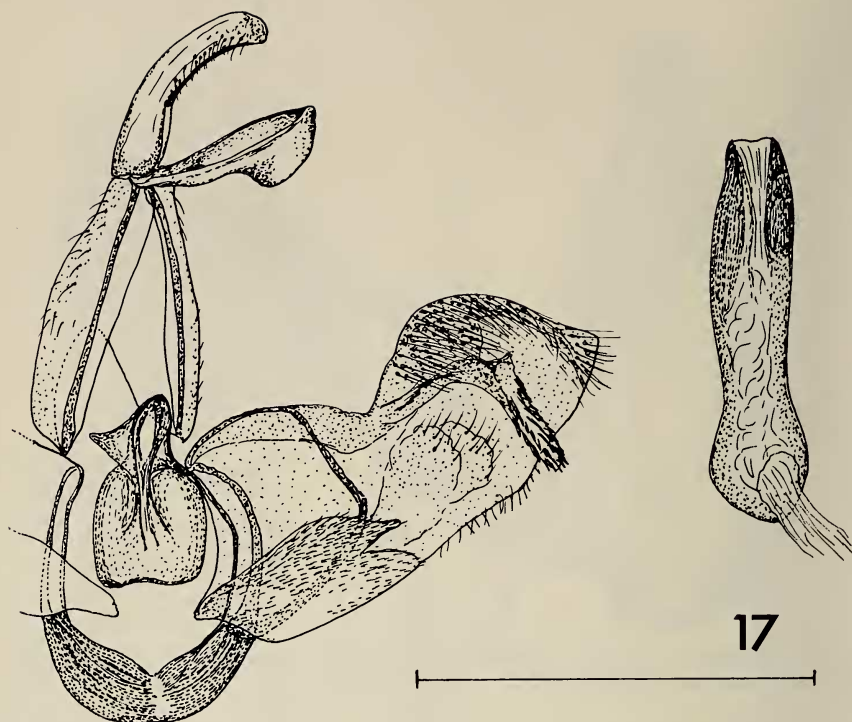


FIG. 17. Male genitalia of *Neeromene parvipuncta*, holotype, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

dorsal and ventral margins; vinculum indistinguishable from saccular lobe of valva; saccus short, broad, straplike and posteriorly truncate; juxta subtriangular, apically tapered, indented basally and developed apically into pair of short prongs. Valva nearly  $3 \times$  uncus length, costal margin strong to the tapered apex; sacculus-vincular region developed into a distinct lobe, ventral margin strong, with zone of sclerotization running introrse into central part of valva, almost touching base of costa, thick, short, curved thorn at 0.5. Aedeagus about  $0.8 \times$  length of valva, stout, LMB ratio about 7:1, lacking cornuti, with apical portion divided to form pair of strong, apically recurved prongs lateral to ductus ejaculatorius.

**Types.** Lectotype  $\delta$  (here designated), PANAMA: "Chiriqui Ribbe", Coll. Staudinger, "*Diptychophora octavianella*" [blue label]; "Origin" [pink label]; "Typus" [red label]; "Praep. Gen. Nr670 $\delta$ " [Bleszyński]; "D2.845 Lectotype" [circular purple-bordered label]; "LECTOTYPE *Diptychophora octavianella* Zeller det. M. Shaffer. 1976", MNHU.

Paralectotypes, 2  $\delta$ , data as above except one has basic data on white (not blue) label, both bear "Paralectotype" [circular blue-bordered labels]; one bears "Abdomen missing" [blue label]; both bear "PARALECTOTYPE *Diptychophora octavianella* Zeller det. M. Shaffer. 1976" [white labels]; one bears "73P" [faded paper], MNHU.

**Discussion.** *Neeromene octavianella*, presently known only from Panama, forms part of a closely related cluster of species including *N. parvalis* and *N. herstanella*.



### *Neoeromene parvipuncta*, new species

**Description.** Alar span 11 mm (Fig. 5) (N = 1). Labial palpi 1.2× head length, yellowish, with blackish tips. Head, thorax and abdomen yellowish with occasional patches of paler cream and dark brown scales. Tarsi of forelegs banded alternately with buff and dark brown. Ground color of forewings golden yellow; basal fascia obsolete, marked only by a few irregular patches of blackish brown; antemedial fascia dark brown, irregular, incomplete, narrow. Discal region of forewing overlain with pale cream scaling; central area with some black or brown patches, but no distinct reniform stigma. Postmedial fascia white, distinct, broad, sharply edged with dark brown. Some fine dark neural streaks extend from disc to termen. Apical region orange, with a central pear-shaped white zone, edged posteriorly with dark brown, some dark brown shading on costa. Terminal region golden yellow, subapical marginal indentation distinct; termen bearing 5–6 indistinct blackish spots set in small areas of white scales, from 0.3 to 0.9. Hindwings white, clouded near apex with pale brown. All cilia pale brown with dark brown tips.

**Male genitalia** (Fig. 17) (N = 1). Uncus curved, bluntly tapered, laterally setulose. Gnathos slightly longer than uncus, apically swollen and cupped. Tegumen with strong posterior margins; saccus simple, broad, apically rounded; vinculum broad, almost as wide in profile as uncus length; juxta broad, quadrate, drawn into pair of anellarlike dorsal projections which close around aedeagus. Valva about 2.2× length of uncus, bluntly tapered; costal region strong, terminating in a heavily spinose protrusion arising at 0.5–0.6 and curving introrse, posteriorly, then ventrad inside valva. Valva with slight dorsoventral constriction at about 0.5; sacculus a spinose lobe partially segregated from base of valva. Aedeagus about 0.8× length of valva, tubular, straight, truncate, with dorsal and ventral zones of apical-subapical sclerotization, not drawn out into apical prongs; LMB ratio about 5.5–6.0:1; cornuti absent.

**Type.** Holotype ♂, BRAZIL: Curitiba, Parana, 920 m, –X.1975, V. O. Becker, in V. O. Becker collection, specimen 4823.

**Discussion.** Nothing is known of the biology of this species; the type specimen was taken in October. On genitalic characters it is closely related to *N. straminella*.

### *Neoeromene straminella* (Zeller), new combination

*Diptychophora straminella* Zeller (1877:32, pl. I, fig. 12).

*Diptychophora straminella* Zeller; Hampson (1896 (1895):943) (misspelling of *straminella*).

*Diptychophora straminella* Zeller; Błeszyński & Collins (1962:299).

*Ptereromene straminella* (Zeller) Błeszyński (1967:92, 96).

**Description.** Alar span 14–15 mm (Fig. 6) (N = 3). Redescribed here; there is more variation than indicated by Zeller. Female not yet collected. Labial palpi about 0.75× head length, yellow, with blackish apices and transverse striping. Head, thorax, abdomen creamy yellow with sprinkling of chocolate scales. Ground color of forewings pale yellowish orange, basal fascia nearly obsolete. Double, faint, reniform stigma present, together with some faint interneural streaks in discal region. Postmedial fascia creamy yellow, thinly edged with dark brown. Terminal zone yellowish, clouded with dark brown, except distally, where the margin bears a row of 5 black spots set in a narrow strip of orange-ochreous. Apical zone bright orange-brown, with a central triangular white mark, banded thinly with black proximally and posteriorly. White wedge of scales at apical costal extremity. Cilia pale brown with darker apices. Ventral surfaces straw, with some repetition of dorsal apical and terminal markings.

**Male genitalia** (Fig. 18) (N = 2). Uncus narrow, tapered, bluntly pointed, curved ventrad. Gnathos subtubular, swollen abruptly at 0.5, then tapering to bluntly pointed apex, curved dorsad. Tegumen simple, with strong ventral margins. Vinculum broad, about 0.75× as wide as uncus length. Saccus large, broad, rounded, about as long as

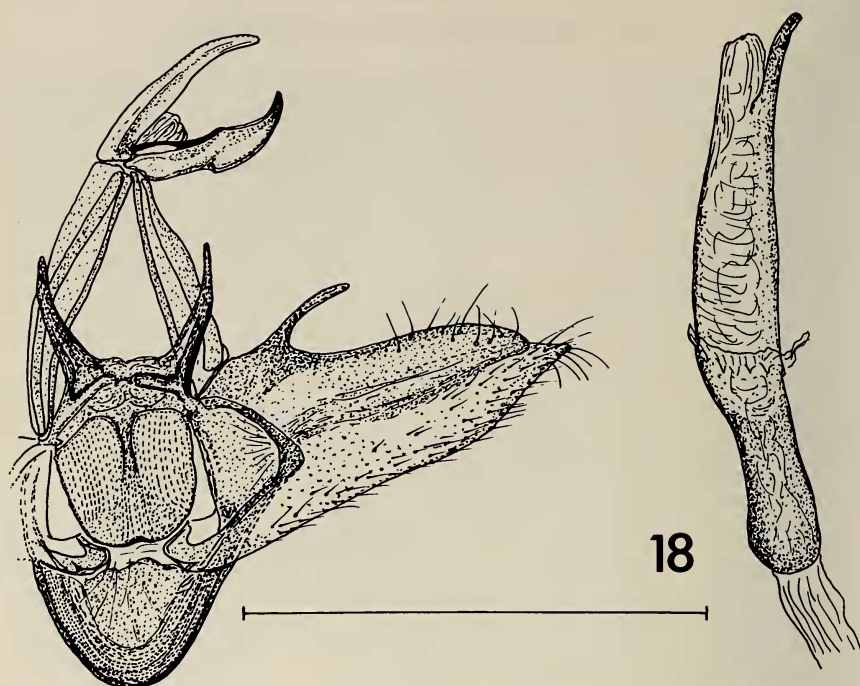


FIG. 18. Male genitalia of *Neeromene straminella*, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

uncus. Juxta an apicomediaally cleft quadrate plate, more rounded basally than apically, fused with an anellar structure bearing a pair of large, curved, strong apical horns, bases of which are partially fused laterally with basal extremities of valval costa. Valva about  $2.5\times$  length of uncus, sacculus weakly developed, costa strong, bearing a curved basal prong nearly half uncus length; costal lobe extends almost to apex of valva, apex discrete and partly separate. Aedeagus about  $1.4\times$  length of valva, curved slightly dorsad, LMB ratio about 8:1. Cornuti absent, but apex bears an elongate, blunt thorn dorsally.

**Type.** Holotype  $\delta$ , BRAZIL: "N. Friburgo Bres.", *Staudinger* (also bears labels "Origin", "Typus", "7:2"), MNHU, genitalia prep. GS-603-SB.

**Other material examined.** 2  $\delta$ , BRAZIL: Petropolis, *Walsingham*, BMNH, BM pyral 15093.

**Discussion.** So far collected only in Brazil, a close relative of *herstanella* and *parvalis*. Flight period unknown.

### *Neeromene felix* (Meyrick), new combination

*Diptychophora felix* Meyrick (1931:108).

*Diptychophora leucanthes* Meyrick (1931:108); Błeszyński & Collins (1962:297). **NEW SYNONYMY.**

*Diptychophora felix* Meyrick; Błeszyński & Collins (1962:297).

*Pareromene felix* (Meyrick) Błeszyński (1967:96).

*Pareromene leucanthes* (Meyrick) Błeszyński (1967:92, 96).

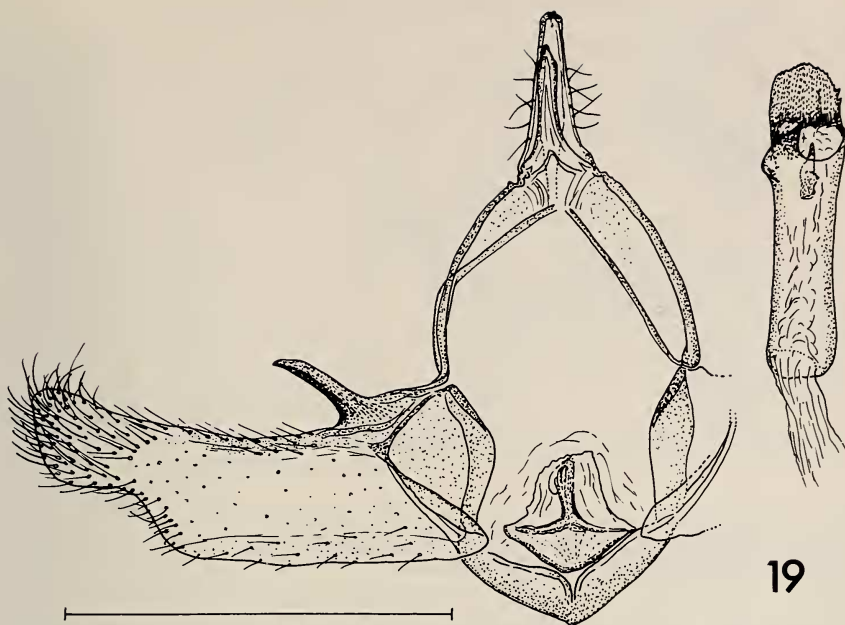


FIG. 19. Male genitalia of *Neeromene felix*, lectotype, posterior aspect of left valva (left), aedeagus (right). Scale = 1 mm.

**Description.** Alar span 12–13 mm (Fig. 7) ( $N = 10$ ). External features adequately described (twice) by Meyrick (1931). Characters described for *leucanthes* overlap those for *felix*.

**Male genitalia** (Fig. 19) ( $N = 2$ ). Uncus simple, tapered, lightly setulose, curved ventrad, with blunt apex. Gnathos about  $0.8 \times$  uncus length, curved slightly dorsad, tapered abruptly near base, then parallel-sided until near slightly hooked, pointed apex. Tegumen simple; vinculum broadly triangular, about  $0.7 \times$  as wide as uncus length; saccus broadly pyramidal, about  $0.5 \times$  uncus length; juxta a subtriangular plate, with a sclerotized inverted "Y" strengthening dorsal apex and expanded ventrolateral margins. Valva broad, sacculus barely differentiated, costal region strong to about  $0.5$ , with thick, simple, slightly curved basal prong  $0.7 \times$  uncus length. Valva parallel-sided to about  $0.7$  from base, then tapering abruptly to a quadrate, setulose, apical lobe. Aedeagus about  $0.7 \times$  valval length, tubular, truncate, stout, LMB ratio about  $6.5:1$ , apex bearing a broad, flattened, spade-shaped, strongly sclerotized spur with serrate margin, and a second much smaller hooked spur below exit of ductus ejaculatorius. A single large, irregular cornutus present subapically.

**Female genitalia** (Fig. 14) ( $N = 2$ ). Anal papillae moderately fused, anterior and posterior apophyses nearly equal; 8th tergum about  $0.8 \times$  length of posterior apophyses; 7th sternum rounded and partly tapered posteriorly; sternum margin turned introrse, combining with lamella antevaginalis into a lodicular structure while lamella turns extrorse, forming a protruding lip. Lateral extremities form a pair of nearly circular cuplike structures directed ventrad. Lamella postvaginalis set deep in the broad antrum, medially broadly fenestrate. Ductus bursae about  $3.5 \times$  length of posterior apophyses, with ductus seminalis joining at about  $0.9$ , close to corpus bursae; ductus bursae pleated from  $0.4$ – $0.6$ ; corpus bursae asiguate.

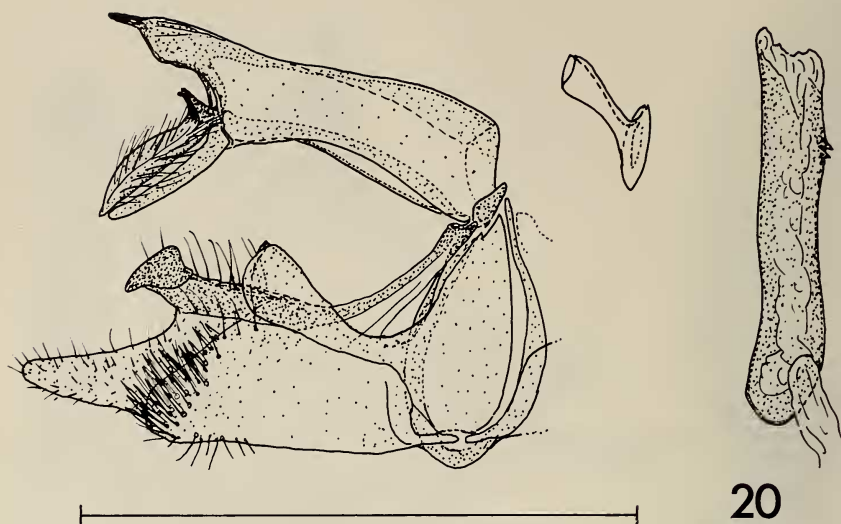


FIG. 20. Male genitalia of *Incaeromene subuncusella*, holotype, posterior aspect with left valva (left), aedeagus (right). Scale = 1 mm.

**Types.** *N. felix*: Lectotype ♂ (selected by S. Błeszyński and designated here). BRAZIL: Obidos, "8.19", Parish BMNH, genitalia pre. BM pyral 7682.

Paralectotypes, BRAZIL: 4 ♂, one lacking abdomen, data as above but "8 & 9.19", BMNH; 1 ♀, data as above, BMNH, and bearing label in Błeszyński's writing "BM ♀ 7684", but unfortunately the slide is missing from the collection; 1 ♂, Santarem, "8.19" Parish, BMNH, BM pyral 7683.

*N. leucanthes*: Holotype ♀, PERU: Iquitos "3.20", Parish, BMNH, genitalia prep. BM pyral. 7682.

**Other material examined.** GUYANA: 1 ? (lacks hindwings, frenula, abdomen): Confluence of Orinoque & New Rivers, 20.viii–20.ix.1937, Hudson, BMNH; ?BOLIVIA: 1 ♀, "Carn. Mus. Acc. 6473" (no other data), CM, genitalia prep. GS-5983-SB.

**Discussion.** Variation in the proportions of brown and yellow clouding in different specimens is considerable. Based on his criteria for distinguishing species, Meyrick's (1931) conclusions were reasonable. This species is probably widespread in the tropical forests of the northern and central regions of South America. The flight period is known to include August and September.

### *Incaeromene*, new genus

Type species *Incaeromene subuncusella*, new species (original designation).

**Description.** Venation as in *Neoeromene*. Genitalia characterized by singular development of dorsal region of tegumen into a hood, projecting over uncus and gnathos, terminating in a strong spur posteriorly, also by costal lobe of valva bearing a broad capitulate protrusion. Sacculus strongly developed as in *Neoeromene*, but posteriorly heavily spinose on inner surface.

**Etymology.** Inca—pertaining to Incas; Ερωμένη (Eromenē)—mistress (f).



*Incaeromene subuncusella*, new species

**Description.** Alar span 15 mm (Fig. 8) (N = 4). Head, labial palpi, thorax, abdomen silvery white; medial surfaces of palpi and patagia with scattered chocolate-brown scaling. Ground color of forewings silvery white. Basal and antemedial fascia obsolete, positions marked by some brown scaling. Postmedial fascia composed of pair of curved brown lines. Termen with weak subapical indentation at about 0.25, and 3-4 black marginal spots from 0.5-0.9. Faint reniform mark present in disc amid patch of brown scaling, some similar clouding on costa at base and subterminal region. Cilia white with brown bars. Hindwings pure silvery white, as are cilia. Underside of forewings dull brown.

**Male genitalia** (Fig. 20) (N = 1). Uncus and gnathos stout, tapered, pointed, slightly curved, setulose. Uncus with pair of sclerotized basal dorsal protrusions. Tegumen strong, drawn dorsoposteriorly into long hood over uncus, terminating in sharp, sclerotized point. Saccus negligible, vinculum narrow. Juxta weak, laterally folded and posteriorly drawn into an anellar structure around aedeagus. Valva about 2.7 × uncus length, with broad sacculus, lobate posteriorly, heavily spinose. Costal region drawn into broad, bluntly capitulate setulose lobe. Aedeagus 2.2 × uncus length, massive, apically lightly sclerotized, with pair of small dorsal subapical thorns.

**Type.** Holotype ♂, PERU: Cuzco, Pillahuata, 2600 m, 14-18.viii.1982, M. Matthews & M. Packer. BMNH genitalia prep. pyral. 17131, in BMNH. Paratypes 3 ♂, same data as holotype, all in BMNH.

**Discussion.** This undistinguished looking species exhibits the most peculiar modification of the dorsal tegumen of any known diptychophorine. Without female genitalia, it is impossible to speculate about the function of this spurred hood over the uncus.

## ACKNOWLEDGMENTS

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## BOOK REVIEW

BUTTERFLIES EAST OF THE GREAT PLAINS, by Paul A. Opler and George O. Krizek. 1984. The Johns Hopkins University Press, 701 West 40th Street, Suite 278, Baltimore, Maryland 21211. Pp. 17 + 294. Price: \$49.50 + shipping.

The book gives comprehensive accounts of the butterflies of the thirty-one states east of the Great Plains. Detailed descriptions of more than 250 species are clearly and succinctly presented. The illustrative material, including detailed maps and 324 spectacular color photographs obtained in the field, add much to the species accounts. Some readers will no doubt complain that the 54 colored plates are set off in the central part of the book and not included with the species descriptions, but the very beauty of the photos as well as their taxonomic utility is best served by having them together.

In the species accounts, the authors present the etymological derivation of the scientific name and a synopsis of the species, stating any noteworthy trait. A lengthier discussion and description of the butterfly follows, which includes its distinguishing characteristics, geographic variation, and various meaningful attributes including statistical measurements of both sexes. Both descriptive and map forms are used to present the overall range. Where applicable, they indicate temporary expansion of range beyond where the species is normally resident. A surprising number of species are indicated whose temporary northern extension of range is cut back by the severity of winter. The extensive review of county records contributed by more than one hundred lepidopterists helps make the data on distribution and habitat one of the most valuable contributions of the book. Habitat descriptions are provided for each species including specific vegetation, plant formations, and even associated soil types.

The format for the species accounts also includes sections on life history and food sources, involving adult nectaring data as well as caterpillar host plants, and it is in these details that Opler and Krizek shine. The sections are full of data and challenging observations which ought to provoke much more interest and enthusiasm among readers in adding to natural history observations.

A lucidly written 33-page introduction contains a series of short essays on smaller topics reflecting the interests of field naturalists. Here the authors discuss such things as patterns of diversity, seasonality, and distribution. These sections should also whet the intellectual appetite and leave readers anxious to learn more.

I find this book very revealing and exciting and feel it will be a valuable addition to the library of every lepidopterist, including those of "professional" as well as "amateur" standing. Part of its beauty lies in the obvious knowledge of field natural history possessed by the authors. It is well done! I hope they will favor us with another volume or two on the natural history of butterflies.

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